



**Petroleum Production Licence No. 62, 168 & 202
(Katnook & Ladbroke Grove Complex)**

Development Plan

and

2005 Operational Review

PPL62, 168 & 202

**Otway Basin
South Australia**

**Prepared by:
Anne Taylor
Dušan Pribilović**

May 2006

CONTENTS

1.	Introduction	4
2.	Compliance With Petroleum ACT and Regulations 2000	4
2.1	Compliance With SEO	4
2.2	Actions to Rectify Non-Compliance	5
3.	Audits Performed in 2005	5
4.	List of Reports and Data Submissions.....	6
5.	Incidents Reported to the Minister in 2005	6
6.	Threats	7
7.	Reserves and Deliverability.....	7
7.1	Katnook Field (Initial=17.4 PJ, Rem=0.4 PJ).....	8
7.2	Haselgrove/Haselgrove South Fields (Initial=11.8 PJ, Rem=1.1 PJ)	8
7.3	Redman Field (Initial=5.9 PJ, Rem=0.4 PJ) - PPL 168.....	8
7.4	Ladbroke Grove Field (Initial=32.1 PJ, Rem=2.7 PJ)	8
8.	Development Activities.....	8
8.1	Development activities in 2005	8
8.2	Development activities for 2006.....	9
9.	Production	9
9.1	Katnook	9
9.2	Haselgrove and Haselgrove South.....	9
9.3	Redman (PPL-168)	10
9.4	Ladbroke Grove	10
9.5	Production Forecasts.....	10
10.	Surface Facilities	11
10.1	2005 Surface Activities and Operations	11
10.2	2005 Expenditure	12
10.3	2006 Surface Activities	12

11.	Reservoir And Downhole	12
11.1	Reservoir Management	12
11.2	Well Schedule	13
11.2.1	Sweet Gas Production.....	13
11.2.1.1	Katnook 2 & 3.....	13
11.2.1.2	Haselgrove 1	13
11.2.1.3	Haselgrove 2	13
11.2.1.4	Haselgrove South 1	14
11.2.1.5	Haselgrove South 2	14
11.2.1.6	Redman 1 (PPL 168)	14
11.2.2	High CO2 Gas Production.....	14
11.2.2.1	Ladbroke Grove 2 &3	14
11.3.1	Static Gradient Surveys.....	14
11.3.2	Kinley Caliper Surveys	15
11.3.3	Liquid Evaluation Tests	15
11.3.4	Water Shutoff Operation	15
11.3.5	Production Logging Testing	15
11.3.6	Reperforation.....	15
11.4	2006 Wellbore Activities	15
12.	Corrosion Program.....	15
12.1	Katnook Facilities	15
12.2	Ladbroke Grove Facilities.....	15

FIGURES

- 1 Location Map
- 2 Katnook Production Performance
- 3 Haselgrove/Haselgrove South Production Performance
- 4 Redman Production Performance
- 5 Ladbroke Grove Production Performance
- 6 Well Production Contribution

APPENDIX 1

Environment Objectives and Assessment Criteria

Petroleum Production Licence No. 62, 168 & 202 Development Plan and 2005 Operational Review

1. Introduction

This document describes the 2005 operational activities associated with the Katnook Gas Plant, Ladbroke Grove Gas Plant and the related gas fields located 10 km South of Penola in the South East of South Australia.

The Katnook, Haselgrove South and Ladbroke Grove fields are located within the production licence PPL62 while Redman is within the production licence PPL168.

The Katnook field came on line from February 1991. The Katnook Gas plant processes gas via low temperature separation to achieve both hydrocarbon and water specifications. Until mid 2003 the plant ran on free flow from well-head pressures. The plant now uses compressors to provide adequate pressure for the low temperature separation to be possible. At present, the compressor suction head pressure has been maintained at approximately 150 psi. The recovered condensate was once trucked to the Mobil Refinery in Adelaide is now trucked to the Shell Refinery in Geelong.

The Katnook Complex total production at the end of December 2005 stands at 33.2 PJ.

The commissioning of the Ladbroke Grove facilities was completed in December 1999 and gas production commenced in January 2000. Ladbroke Grove gas is processed for removal of liquids through the Ladbroke Grove Gas Plant before being delivered to the Power Station.

The Ladbroke Grove Power Station has two LM 6000 gas turbines for electricity generation. Construction of the first turbine was completed in 1999, and construction of the second was completed in April 2000. Sweet gas from the Katnook plant is used to start the turbines.

Total production for Ladbroke Grove at the end of December 2005 is 29.4 PJ.

Sales gas production from PPL62 and PPL168 in South Australia supplies a regional gas market in the south east of South Australia. In 2006 this gas market is expected to be 1.26 PJ with the major consumer being the KCA paper mill at Snuggery.

High CO₂ gas is also produced from the Ladbroke Grove gas field in PPL62 for use in on-site power generation. Demand in 2006 is expected to be approximately 2.6 PJ.

2. Compliance With Petroleum ACT and Regulations 2000

2.1 Compliance With SEO

In 2005 Katnook and Ladbroke Grove Gas Plants have been operated in general accordance with the Petroleum Act 2000 and its regulations.

Compliance with the objectives of the Katnook and Ladbroke Grove SEO has been good with all objectives being met.

Compliance with the assessment criteria on two of the objectives has not been fully met.

The assessment criteria "No spill outside areas designed to contain them" from Objective 2 was not met due to the two spill incidents that occurred in 2005. The spills did not result in surface water, groundwater or ongoing soil contamination therefore the objective was met.

Petroleum Production Licence No. 62, 168 & 202 Development Plan and 2005 Operational Review

The assessment criteria "No unplanned interruptions of supply resulting in gas restrictions being applied to commercial and domestic customers" from Objective 3 was not fully met due to the supply restrictions implemented to end customers during 2005 due to field deliverability decline. The customer interruptions were not related to maintenance of facilities and therefore the objective was met.

2.2 Actions to Rectify Non-Compliance

The 2 spills that occurred in 2005 have resulted in a non-compliance with assessment criteria "No spills outside areas designed to contain them". The following actions have been taken to minimise the risk of a similar event occurring in the future:

- Permanent installation of water circulation and transfer equipment to eliminate the use of portable pumps and flexible hoses.
- Plumbing of compressor oil tank breathers to containment.
- Review of compressor oil filling procedures and valve labelling.

The following actions were performed to minimise the impact of non-compliance with the assessment criteria "No unplanned interruptions of supply resulting in gas restrictions be applied to commercial or domestic customers":

- Fast-tracking of interconnect project to boost Katnook production deliverability.
- Daily communication with retail customer to provide forecast maximum deliverability.
- Change plant operating parameters to maximise available line pack.

3. Audits Performed in 2005

Five audits of the Katnook/Ladbroke Grove operations were conducted in 2005.

- SA Workcover 12 month follow up on 24th and 25th of August 2005
- Origin Energy HSE Management System Audit on 10th and 11th of October 2005 in Brisbane office and 17th till 19th of October 2005 onsite.
- Katnook HSE Risk Review was conducted from 31st of October till 4th of November 2005.
- Contractor audits were also performed on Scott's Transport and Northcott Contracting.

The SA Workcover visit on 24th and 25th of August highlighted several deficiencies in the sites compliance with the Origin HSE Management System. The recommendations from the SA Workcover visit were reviewed and the following actions taken:

- Thorough HSE audit of compliance with the Origin Energy HSE Management System conducted on 10th and 11th of October 2005 in Brisbane office and 17th, 18th and 19th of October 2005 at Katnook Gas Plant.
- Risk assessment and risk register review was conducted at Katnook Gas Plant over a 5 day period from 31st of October till 4th of November 2005.
- Contractor HSE Reviews were performed on Katnook condensate haulage contractor Scott's Transport and Katnook waste water haulage contractor Northcott Contracting.

The audits identified that Katnook Gas Plant is well run with generally good work practices. There is a low staff turnover and the key operations personnel are very well experienced. The plant has a very good safety record with only 2 minor LTI's in the plants life, and the plant has maintained a high level of availability.

Key areas for improvement recognised are:

- Several work practices considered "routine" would benefit from review and formalising into procedures.
- Training of personnel to clarify their HSE responsibilities and obligations.

**Petroleum Production Licence No. 62, 168 & 202
Development Plan and 2005 Operational Review**

- Improve execution of OHS worksite inspections and documentation.
- Make available and control various records at a site level for future SA Workcover visits.

4. List of Reports and Data Submissions

The following reports were provided to PIRSA during 2005.

Reports	Remarks
Monthly Report	Monthly production summaries and plant activities.
Quarterly Report	Quarterly cased hole activity reports.
Well Activity Report	Katnook and Ladbrooke Grove well re-completion reports
Quarterly Compliance meeting	Compliance meeting frequency has been changed to an as required basis.
Annual Report	2004 Development Plan & Operational Review.
Project	Notification of projects.

5. Incidents Reported to the Minister in 2005

In 2005 two incidents were reported.

Reported Incident 1: Katnook Evaporation Pond Water Spill

While circulating water in evaporation pond #1 at Katnook Gas Plant, the discharge hose of the circulation pump moved from within the pond banks to outside the pond banks therefore creating a spill of evaporation pond water. The spill was still in progress when discovered at 0630 on 21st of January 2005. The length of time the water had been discharging to ground is unknown.

Water had pooled against the pond bank for a length of 20 to 25 meters and had flowed outside the plant boundary affecting an area of approximately 12 x 12 meters on the adjacent landowner property.

As a precautionary measure soil samples were taken from the adjacent grazing land and tested. The report concluded that it was unlikely that the release from the evaporation pond would impact on adjacent land use as grazing pasture and that no further investigation was required.

The following improvements have been implemented to reduce the risk of this or similar incident occurring in the future:

- Installation of permanently mounted pumps and pipework for the purpose of water transfer and water circulation.
- Use of solidly anchored non flexible polyethylene pipe for discharge into ponds

Reported Incident 2: Compressor Header Tank Overflow

While performing a routine maintenance service on compressor #2, the oil header tank in compressor #1 was overfilled.

Petroleum Production Licence No. 62, 168 & 202 Development Plan and 2005 Operational Review

Oil is fed from a common oil storage tank and pump to each compressor via a manifold supplying both units. The compressor #1 tank fill valve had been left in the open position from a previous oil fill. As oil was being pumped into compressor #2, the header tank in compressor #1 was also being filled inadvertently.

The compressor #1 header tank was overfilled by a quantity of approximately 150 L, of which 30 L remained on the skid and 120 L went to ground. The area affected by the oil was approximately 11 sq meters.

Following the incident the soil from the spill area was cleaned up by use of oil absorbents and excavation. Soil samples were collected by third party consultant and tested for TPH. Results of the testing indicated no TPH was detectable in the soil therefore no further soil removal was required.

The following improvements had been implemented to reduce the risk of this or similar incident reoccurring:

- Oil filling procedures reviewed and valves labelled to clearly identify.
- Compressor header tank breathers have been plumbed into the compressor skid sumps so any overfill will be directed into containment on the compressor skid.

6. Threats

No new foreseeable threats or hazards to be reported in 2006.

7. Reserves and Deliverability

The following table summarises the field's initial and remaining gas reserves.

Cumulative gas field production (from the Pretty Hill reservoirs) to 31 December 2005 totals 62.6 PJ of which the Ladbroke Grove gas field accounts for 29.4 PJ. The total initial estimated 2P gas reserves for the Katnook (including Haselgrove, Haselgrove South and Redman) and Ladbroke Grove fields are 35 and 32.2 PJ respectively (refer to the following table). The gas reserves as at 31 December 2005 are 1.9 PJ in the Katnook field and 2.7 PJ of high CO₂ content gas in the Ladbroke Grove field.

Fields	Total Initial Gas Reserves (PJ)	Total Gas Production @ 31 Dec 05 (PJ)	Total Remaining Gas Reserves @ 31 Dec 05 (PJ)	Reserves Classification
Katnook (PPL62)	17.4	17.0	0.4	2P
HG & HGS (PPL62)	11.8	10.7	1.1	2P
Redman (PPL168)	5.9	5.5	0.4	2P
Ladbroke Grove	32.1	29.4	2.7	2P
TOTAL	67.2	62.6	4.7	2P

A simulation study of the Katnook, Haselgrove/Haselgrove South and Redman fields was undertaken in late 2004 and further revised in late 2005 in response to increasing water production. This model was the basis for the field gas reserves and deliverability model.

The Ladbroke Grove gas field was evaluated primarily using a reservoir simulation which was revised in mid 2005.

Petroleum Production Licence No. 62, 168 & 202 Development Plan and 2005 Operational Review

Figures 2 to 5 show the well production performance.

7.1 Katnook Field (Initial=17.4 PJ, Rem=0.4 PJ)

The Katnook gas reserves are based on the October 2005 simulation study. The eclipse 100 reservoir simulator was used to set up a Katnook model in conjunction with the other Otway fields. Based on this study, the field OGIP is 26.4 bcf from which 17.4 PJ is recoverable using a minimum flowing wellhead pressure (FWHP) of 400 psi. The minimum rate was set to be 0.2 MM scf/d as determined by the VLP tables used in the simulation model. The economical cut off date for the Katnook and Haselgrove fields is estimated to be sometime in late 2007 or early 2008.

7.2 Haselgrove/Haselgrove South Fields (Initial=11.8 PJ, Rem=1.1 PJ)

The Haselgrove and Haselgrove South gas reserves are also based on the October 2005 simulation study. The Haselgrove / Haselgrove South field model was built and matched for the gas and water production history, and the observed reservoir pressure data in conjunction with the other Otway fields. Based on this study, the field OGIP is 20.0 bcf from which 11.8 PJ is recoverable using a minimum FWHP of 400 psi. The economical cut off date for Haselgrove field is estimated to be sometime late in 2007 or early 2008.

7.3 Redman Field (Initial=5.9 PJ, Rem=0.4 PJ) - PPL 168

The Redman gas reserves are also based on the October 2005 simulation study. The Redman field model was built and matched for the gas and water production history, and the observed reservoir pressure data in conjunction with the other Otway fields. Based on this study, the field OGIP is determined to be 10.4 bcf from which 5.9 PJ is recoverable using a minimum FWHP of 400 psi. The well is expected to cease production in mid 2006. A work over operation is planned in early 2006 to install a velocity string into the well to extend the producing life of the well.

7.4 Ladbroke Grove Field (Initial=32.1 PJ, Rem=2.7 PJ)

The Ladbroke gas reserves are based on the September 2005 simulation study. The Ladbroke field model built in 2002 was re-history matched using the production data up to March 2005. The aquifer size and strength was adjusted to match the gas and water production history, and the observed reservoir pressure data. Based on this study, the field OGIP is determined to be 64.4 bcf from which 32.1 PJ is recoverable, using a minimum FWHP of 700 psi and a minimum cut off rate of 5 MM scf/d.

8. Development Activities

8.1 Development activities in 2005

A flow and pressure buildup test was performed on Limestone Ridge 1 in February 2006. The purpose of this test was to evaluate the field's development potential by determining the reserves contained within the field and likely rates of production. Test results indicate that the well was draining a volume of between 0.2 and 0.5 bcf and as a result, field production was regarded as uneconomical. The well will be plugged in early 2006.

**Petroleum Production Licence No. 62, 168 & 202
Development Plan and 2005 Operational Review**

8.2 Development activities for 2006

No new development activities are planned for 2006.

9. Production

Production data sheets for the Katnook, Haselgrove/Haselgrove South, Redman and Ladbroke Grove reservoirs were forwarded to PIRSA on a monthly basis. Total production for 2005 were 193,799 MSCM (5,304 TJ) of gas and 3,810 KL of condensate.

Customer supply was interrupted when Ladbroke Grove 3 ceased production in April 2005.

Katnook 2, Haselgrove South 1, Redman 1 and Ladbroke Grove 2 were the primary producers throughout most of 2005 (Figure 6).

The following table shows the monthly production figures for 2005:

2005 PRODUCTION FIGURES

Month (2005)	Katnook Complex (TJ)	Ladbroke Grove (TJ)	Condensate (KL)
January	200.8	10.7	326.1
February	172.1	214.4	324.7
March	190.9	409.3	399.2
April	191.2	516.5	389.3
May	193.0	300.9	365.4
June	164.5	207.1	316.4
July	169.4	307.9	337.6
August	155.8	257.8	301.6
September	144.4	296.1	284.0
October	154.4	300.8	304.0
November	126.9	241.3	239.0
December	120.8	256.5	223.0
Total	1,984.2	3,319.4	3,810.2

9.1 Katnook

A total of 16,750 MSCM of raw gas, 246 kL of condensate and 2536 kL of water was produced from Katnook 2 and Katnook 3 in 2005.

Cumulative production from Katnook 2 and Katnook 3 at the end of 2005 was 438,519 MSCM of raw gas, 15,277 kL of condensate and 11,198 kL of water.

9.2 Haselgrove and Haselgrove South

A total of 18,667 MSCM of raw gas, 1,639 kL of condensate and 1,608 kL of water were produced from the Haselgrove and Haselgrove South fields in 2005.

Cumulative production from Haselgrove and Haselgrove South at the end of 2005 was 275,968 MSCM of raw gas, 23,987 kL of condensate, and 7,447 kL of water.

**Petroleum Production Licence No. 62, 168 & 202
Development Plan and 2005 Operational Review**

9.3 Redman (PPL-168)

A total of 14,689 MSCM of raw gas, 1,438 kL of condensate and 1,169 kL of water were produced from Redman field in 2005.

Cumulative production from Redman Field at the end of 2005 was 140,162 MSCM of raw gas, 15,200 kL of condensate, and 1,169 kL of water.

9.4 Ladbroke Grove

A total of 143,683 MSCM of raw gas, 487 kL of condensate and 3,921 kL of water were produced from Ladbroke Grove field in 2005.

Cumulative production from Ladbroke Grove Field at the end of 2005 was 1,247,331 MSCM of raw gas, 7,026 kL of condensate, and 16,363 kL of water.

9.5 Production Forecasts

The production forecasts for 2006 and 2007 presented in the following tables are provided as the “most likely” scenario. The forecasts reflect the reduced gas rates from the Katnook Gas Plant as the local south-east market is connected to the SEA gas pipeline (without interconnect).

With respect to Ladbroke Grove, one turbine is expected to continue to run on Ladbroke Grove gas until end of October 2006. At this time the decision to cease production from the Ladbroke Grove field will be reviewed.

PRODUCTION FORECAST FOR 2006

Month (2006)	Katnook Gas (TJ)	Ladbroke Grove (TJ)	Condensate (KL)
January	122	260	249
February	117	260	239
March	112	260	217
April	107	260	209
May	103	260	201
June	99	260	194
July	95	260	152
August	91	260	146
September	87	260	140
October	83	260	134
November	80	6	128
December	77	6	123
Total	1,173	2,612	2,132

**Petroleum Production Licence No. 62, 168 & 202
Development Plan and 2005 Operational Review**

PRODUCTION FORECAST FOR 2007

Month (2007)	Katnook Gas (TJ)	Ladbroke Grove (TJ)	Condensate (KL)
January	73	5	127
February	71	5	122
March	68	5	117
April	65	5	112
May	62	5	108
June	60	4	104
July	57	4	99
August	55	4	95
September	53	4	92
October	51	4	88
November	49	4	84
December	47	3	81
Total	711	52	1,230

10. Surface Facilities

10.1 2005 Surface Activities and Operations

In 2005 the following projects were completed:

Ladbroke Grove to Katnook Interconnect Project

The purpose of the Interconnect Project was to introduce gas from the Ladbroke Grove field into the Katnook Gas Plant for processing with the normal Katnook Gas stream. The project enables the production of potentially stranded gas reserves from Ladbroke Grove into the Katnook Gas stream while maintaining the Katnook sales quality within the agreed specification.

Main Switchboard Modification

Modifications were made to the main switchboard at Katnook Gas Plant to facilitate the connection of a backup generator for use in the event of power failure. Previously, in the event of a power failure, production through the plant was maintained by using the Calcium Chloride Dehydrator Unit flowing under natural pressure drive from the wells. As well delivery pressures declined, the free flow to the Calcium Chloride Dehydrator ceased being a realistic back-up process and a risk to security of supply was identified.

The modifications to the main switchboard at Katnook enabled a back-up generator to be installed on an automatic switching circuit to power the gas compressors and ancillary equipment in the event of a power outage.

Liquids Handling Upgrade Project

In early 2005 the Liquids Handling Upgrade project was commissioned and completed. The scope of the project was:

- Installation of an oily water processing tank;
- Diversion of produced water directly to the oily water processing tank;
- Review sizing of inlet vessel dump valve capacity;
- Installation of pumps to transfer water between ponds
- Installation of pipework to enable pond water circulation for conditioning;
- Installation of pipework to enable loadout of water to existing loadout bay;

Petroleum Production Licence No. 62, 168 & 202 Development Plan and 2005 Operational Review

A planned shutdown at Katnook Gas Plant in November 2005 allowed the following maintenance operations to be completed:

- Calibration and Testing of Instrumentation
- Cause and Effect Verification
- Emergency Shutdown Testing
- Vessel Inspections
- UT scanning of Condensate Tank

At Ladbroke Grove vessel inspections were performed as well as UT scanning of pipe-work in the plant and at well sites. The carbon steel inlet spool to vessel KL-V-002 was replaced with a duplex stainless steel spool due to early signs of corrosion attack.

10.2 2005 Expenditure

Commercial in Confidence

10.3 2006 Surface Activities

Activities Planned for 2006 include:

- No activity outside normal operations and maintenance is planned for 2006.

11. Reservoir And Downhole

11.1 Reservoir Management

Management of each fields gas production has been planned based on the following considerations.

- Safety and environmental considerations
- Maximise gas recovery from the field
- Reservoir considerations
- Wellbore considerations
- Contractual obligations and market requirements
- Plant constraints and operational considerations
- Turbine operation and constraints (for high CO₂ gas)
- Field deliverability and production optimisation
- Data acquisition and field monitoring
- Maximise condensate revenue
- Availability of efficient back-up options

Petroleum Production Licence No. 62, 168 & 202 Development Plan and 2005 Operational Review

Acquiring production information, monitoring the well head shut-in and flowing pressure and measuring the CO₂ level (for Ladbroke Grove) on a routine basis are essential for updating the field gas deliverability forecast and on going reservoir evaluation.

11.2 Well Schedule

The following well schedules have been programmed to meet all the reservoir and operating considerations.

11.2.1 Sweet Gas Production

There are 5 sweet gas producers in PPL 62 & 168, Katnook 2, Katnook 3, Haselgrove 1, Haselgrove 2 and Haselgrove South 1 with flow capacity ranging from 200 to 7000 md.ft. All of the wells are currently required to meet the required gas demand.

11.2.1.1 Katnook 2 & 3

The Katnook Field came on production from February 1991 to supply gas to the southeast market. Katnook was the only producing field in this area until end of May 1997 when the Haselgrove Field commenced production. In November 2003 an unsuccessful attempt was made to put Katnook 3 back on production. The well had been shut-in due to water handling difficulties in the gas plant. Figure 2 shows Katnook 2 and 3 production histories. The total gas production from Katnook 2 and 3 at the end of December 2005 is 137,658 MSCM and 300,861 MSCM respectively.

Katnook 2 is scheduled to supply 31% of the total gas demand in 2006.

11.2.1.2 Haselgrove 1

The total gas production from Haselgrove 1 at the end of December 2005 is 102,761 MSCM (Figure 3).

Haselgrove 1 is scheduled to supply 5% of the total gas demand in 2006.

11.2.1.3 Haselgrove 2

Due to poor well deliverability Haselgrove 2 was put on production for a short period in 2000 (Figure 3). The gas production from Haselgrove 2 totals 14,496 MSCM at the end of December 2005.

Haselgrove 2 is scheduled to supply 7% of the total gas demand in 2006.

**Petroleum Production Licence No. 62, 168 & 202
Development Plan and 2005 Operational Review**

11.2.1.4 Haselgrove South 1

The total gas production from Haselgrove South 1 at the end of 2005 stands at 158,710 MSCM.

Haselgrove South 1 is scheduled to supply 27% of the total gas demand in 2006 (Figure 3).

11.2.1.5 Haselgrove South 2

This well has a very low deliverability and it is planned to be used as an observation well (not connected). As shown in the Figure 3 the Haselgrove South 2 wellhead shut-in pressure has declined due to production from Haselgrove South 1.

11.2.1.6 Redman 1 (PPL 168)

The total gas production from Redman 1 at the end of December 2005 stands at 140,162 MSCM.

The well is scheduled to supply 30% of the total gas demand in 2006 (Figure 4).

11.2.2 High CO2 Gas Production

11.2.2.1 Ladbroke Grove 2 &3

The Ladbroke Grove Field came on production from January 2000 to supply gas to the Ladbroke Grove power generation station. Ladbroke Grove 2 and 3 are high CO2 gas producers. These wells have flow capacity of 10,000.0 and 4160.0 md.ft respectively. Late in 2004 water production began increasing in Ladbroke Grove 3, the well only contributed to sales until April 2005. Figure 5 shows Ladbroke Grove 2 and 3 production performance for the past years. The total gas production from Ladbroke Grove 2 and 3 to the end of December 2004 is 775,675 MSCM and 471,656 MSCM respectively.

Ladbroke Grove 2 is scheduled to supply 100% of the total gas demand in 2006.

11.3 Wellbore Activities

11.3.1 Static Gradient Surveys

A static gradient survey was conducted on Ladbroke Grove 3 in February 2005. The result of the survey was incorporated into the 2005 reserves updates.

A static gradient survey and flow build up test was conducted on Limestone Ridge 1 in February 2005 to determine the commerciality of the field development. The results indicated that the OGIP of the field was too small for the development to be deemed economical.

11.3.2 Kinley Caliper Surveys

No Caliper surveys were conducted in 2005

11.3.3 Liquid Evaluation Tests

During May 2005 liquid evaluation tests were performed on Katnook 2, Haselgrove 1, Haselgrove South 1, Redman 1 and Ladbroke Grove 3. The tests were performed to determine gas and liquid production volumes in each of the wells. The results of the test were used to update the production forecasts and reserves.

11.3.4 Water Shutoff Operation

Bridge plug set in Haselgrove South 1 to mitigate water production as a part of water shut off operations. The well was reperforated further up the well bore to maintain production in March 2005.

11.3.5 Production Logging Testing

Production logging testing was performed on Haselgrove South 1 and Redman 1 in March 2005 to help identify the water production interval for water shut off operations.

11.3.6 Reperforation

Haselgrove1, Haselgrove South 1 and Redman 1 wells were reperforated in March 2005. The results of this are described in the Haselgrove1, Haselgrove South 1 and Redman 1 reperforation report.

11.4 2006 Wellbore Activities

Activities planned for 2006 include:

- Blowdown of Katnook 3 and Ladbroke Grove 3 in an attempt to reinitiate production
- Static gradient surveys of Ladbroke Grove 3, Haselgrove South 1 and Redman 1 to evaluate the wells' production capacity and reservoir pressure.
- Velocity strings installations in Haselgrove South 1 and Redman 1 to alleviate loading issues

12. Corrosion Program

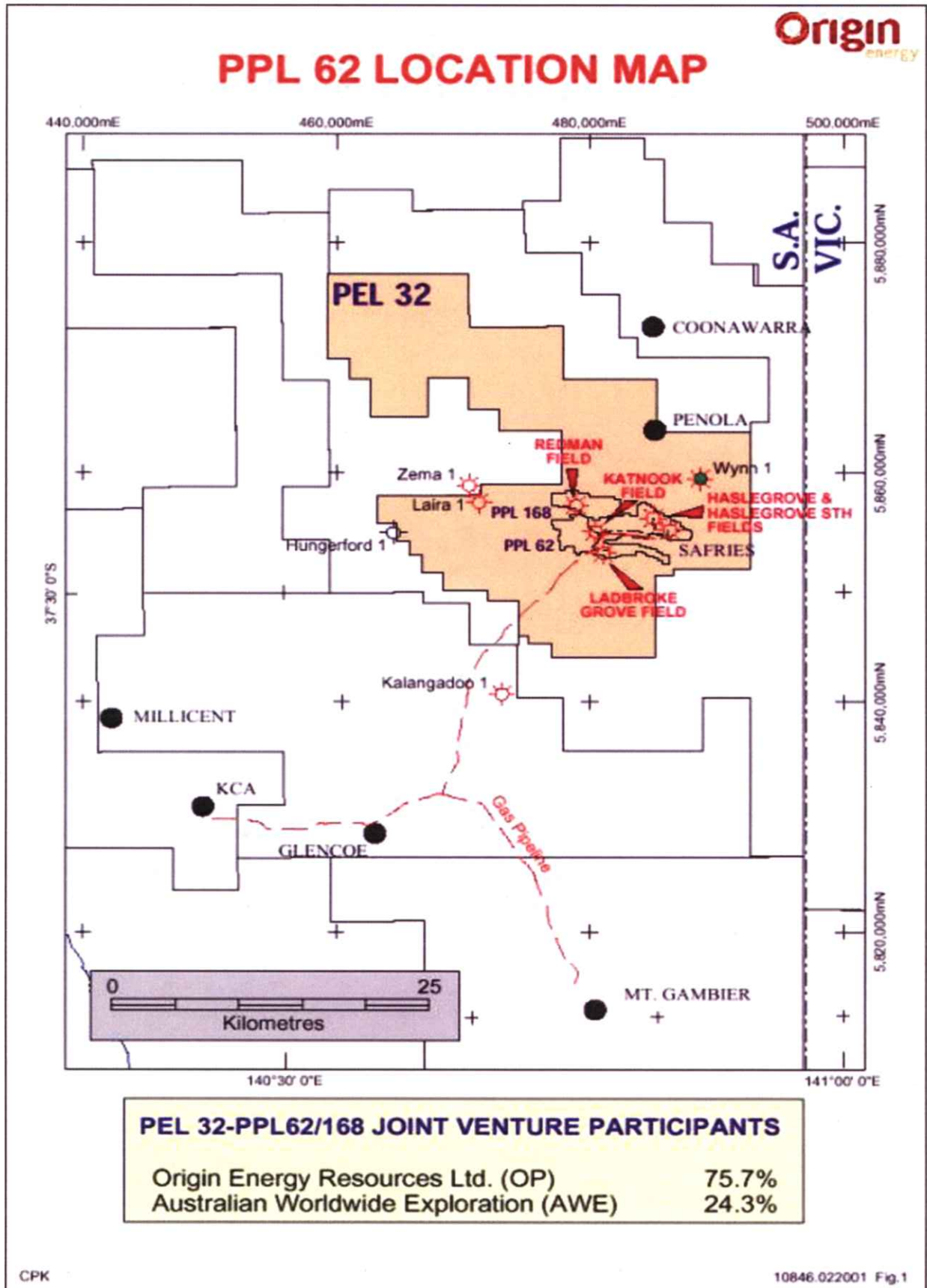
12.1 Katnook Facilities

Thickness testing of vessels inspected at Katnook showed no appreciable wall loss.

12.2 Ladbroke Grove Facilities

At Ladbroke Grove corrosion monitoring activities consisted of the following:

- Daily checks of corrosion inhibitor injection rates.
- Vessel Inspections
- UT scanning of Vessels
- UT scanning of plant pipework and wellsite pipework
- Replacement of inlet spool to vessel KL-V-002 with duplex stainless steel.



KATNOOK 2&3

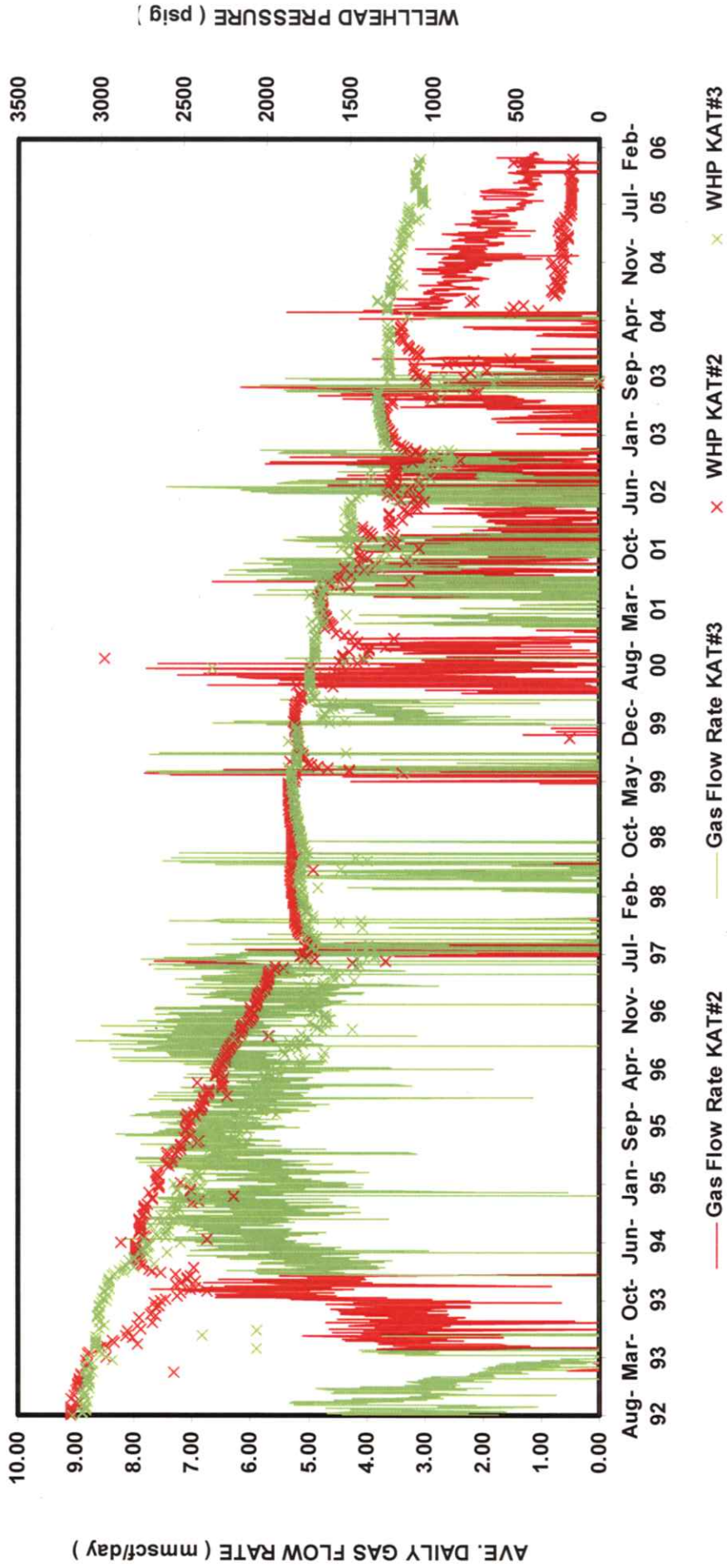


FIGURE 2
17

HASELGROVE / HASELGROVE SOUTH

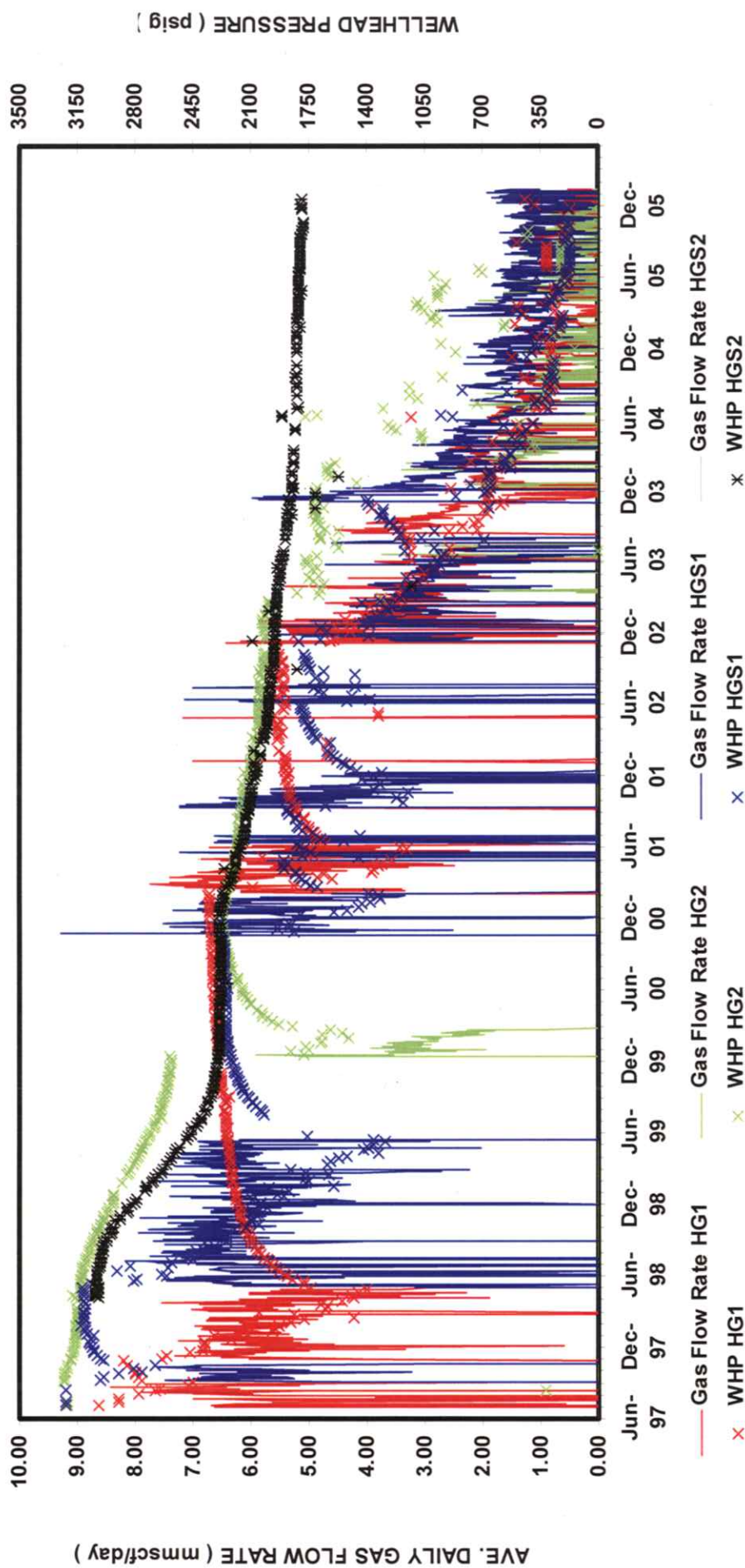


FIGURE 3

REDMAN 1

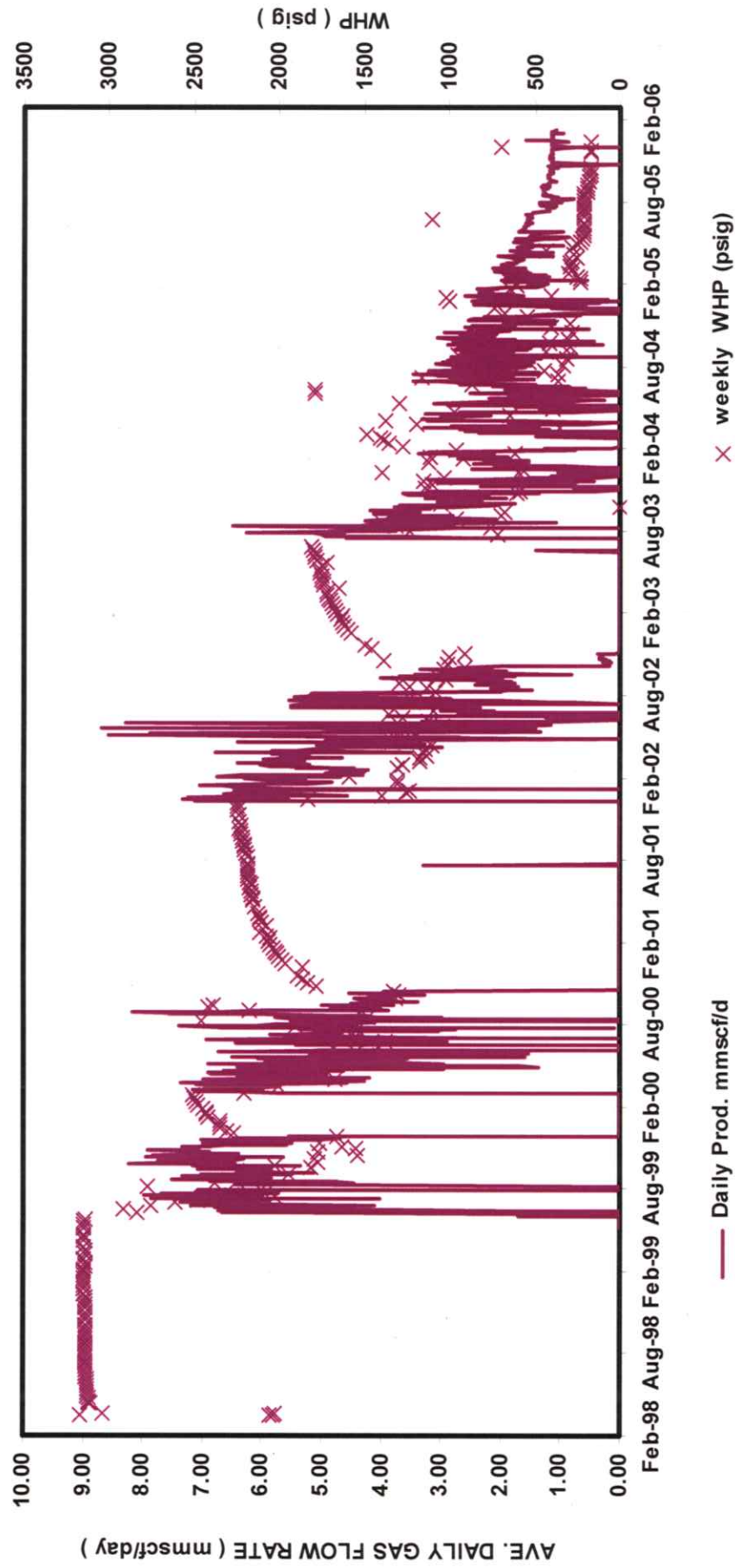


FIGURE 4

LADBROKE GROVE FIELD

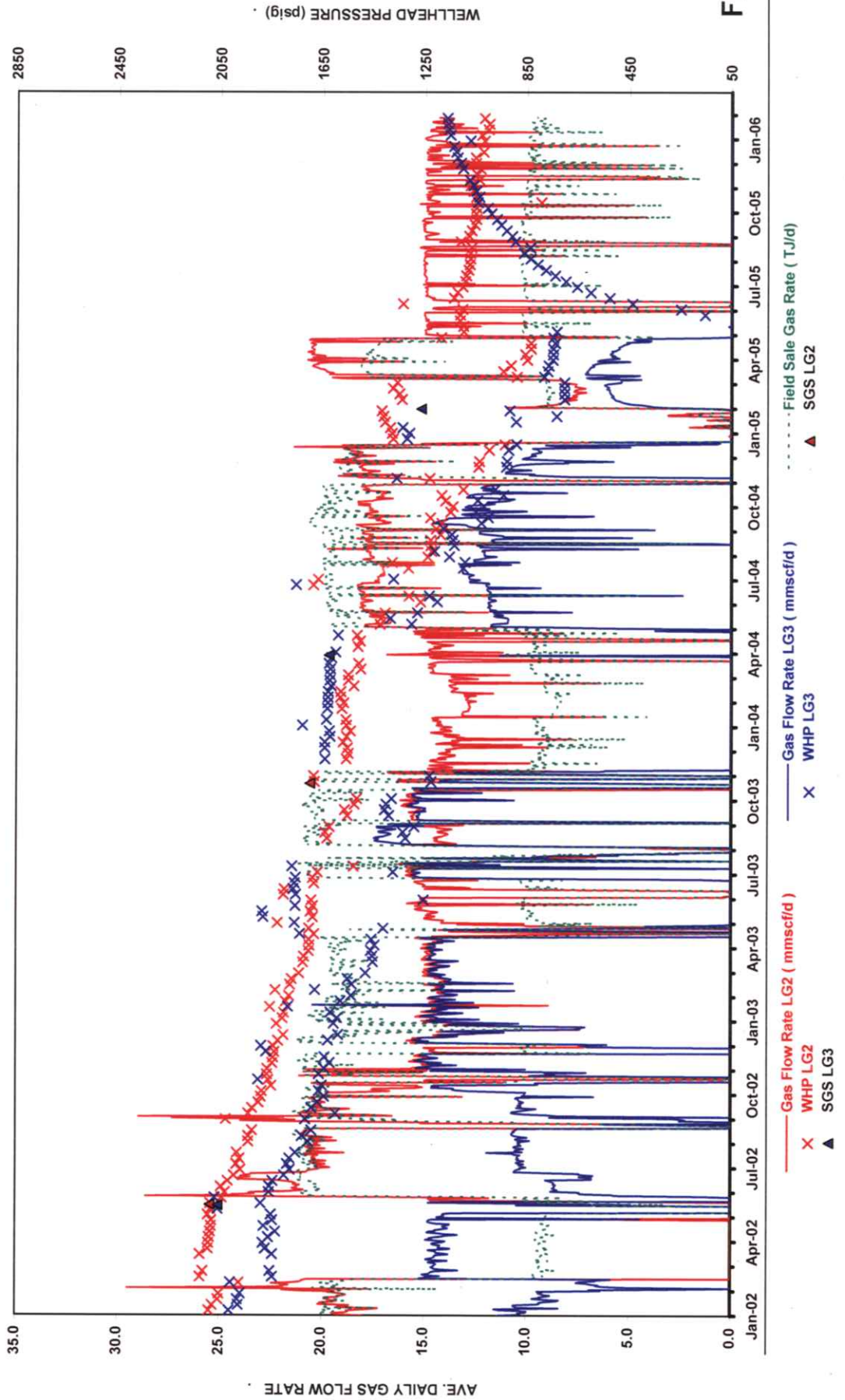


FIGURE 5

WELL PRODUCTION RATES

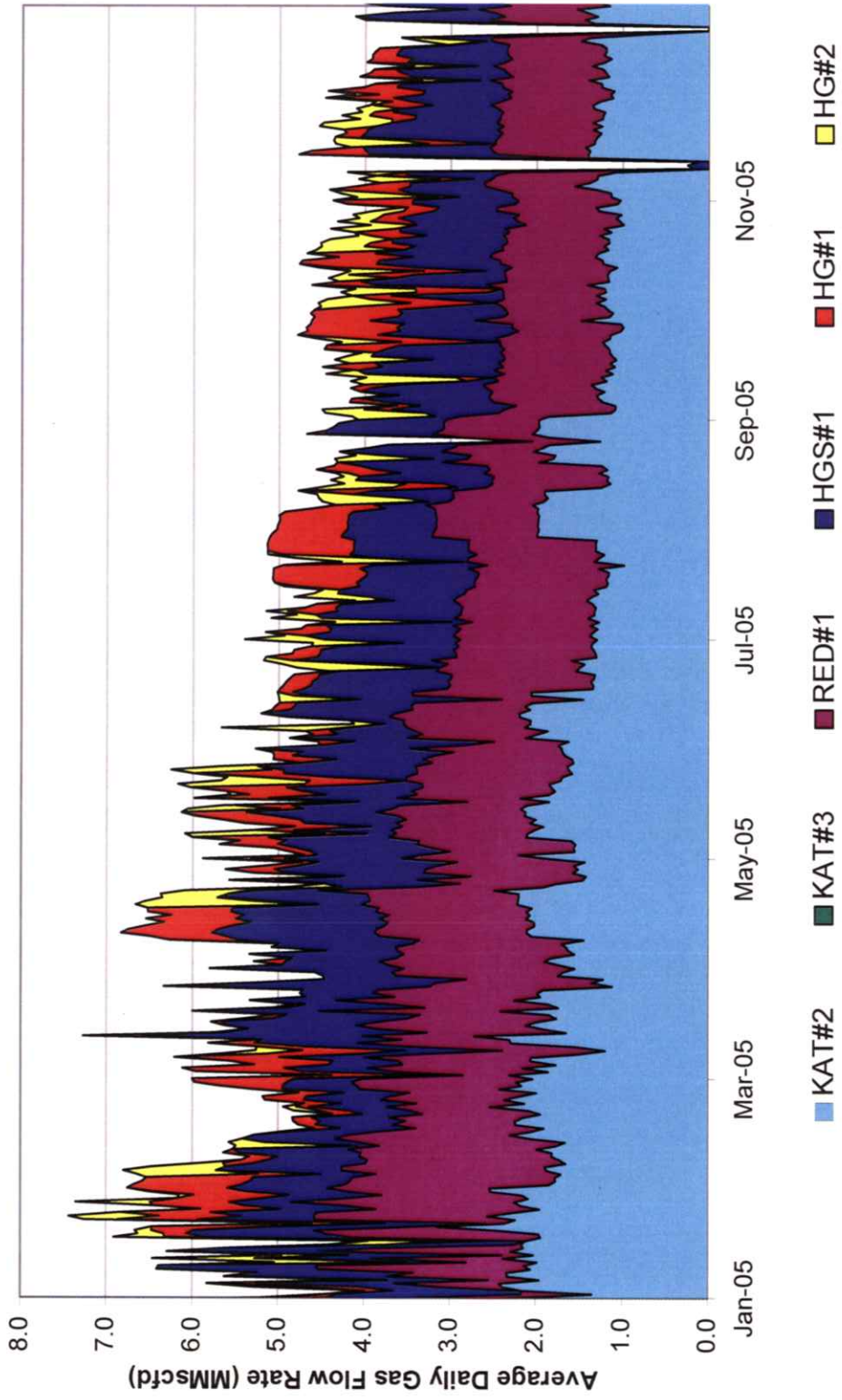


FIGURE 6

APPENDIX 1

ENVIRONMENTAL OBJECTIVES AND ASSESSMENT CRITERIA

PERFORMANCE AGAINST OBJECTIVES 2005

**Petroleum Production Licence No. 62, 168 & 202
Development Plan and 2005 Operational Review**

ENVIRONMENTAL OBJECTIVES AND ASSESSMENT CRITERIA

Objectives	Assessment Criteria	Performance Against Objective
1. Avoid surface water, groundwater and soil contamination	<ul style="list-style-type: none"> • No contamination of surface water, groundwater or soil as a result of operation activities • No spills outside areas designed to contain them • No crossflow behind casing in production wells • Sufficient barriers demonstrated in production wells to prevent likelihood of crossflow 	<ul style="list-style-type: none"> • Groundwater monitoring performed in line with approved management strategy. Results indicate no significant contamination to groundwater. All spills have been cleaned up to prevent surface water and soil contamination. Where appropriate soil samples have been analysed for contamination. • 2 spills occurred in 2005, however on both occasions clean-up prevented ongoing contamination. • Well pressure surveys indicate no casing failures • Wells constructed with appropriate barriers in place. <p align="center">Objective Achieved</p>
2. Minimise disturbance to native vegetation and native flora	<ul style="list-style-type: none"> • No injuries to native fauna due to facility processes • Removal of native vegetation in accordance with requirements of Native Vegetation Council 	<ul style="list-style-type: none"> • No native fauna injured in 2005. • No development occurred in 2005 resulting in the removal or damage to native vegetation. <p align="center">Objective Achieved</p>
3. Maintenance of facilities to prevent failure	<ul style="list-style-type: none"> • No unplanned interruptions of supply resulting in gas restrictions being applied to commercial and domestic customers 	<ul style="list-style-type: none"> • No unplanned supply interruptions to customers occurred during 2005 due to plant failures. • End customer interruption that did occur during 2005 was due to reduced field deliverability. <p align="center">Objective Achieved</p>
4. Avoid disturbance to sites of Aboriginal and European heritage significance	<ul style="list-style-type: none"> • No unauthorised disturbance to Aboriginal or European heritage areas 	<ul style="list-style-type: none"> • No activities conducted outside current operating areas in 2005 <p align="center">Objective Achieved</p>
5. Minimise the Risk to the public and other third parties	<ul style="list-style-type: none"> • No injuries to the public as a result of facility processes 	<ul style="list-style-type: none"> • No injuries to the public as a result of facility processes <p align="center">Objective Achieved</p>

Petroleum Production Licence No. 62, 168 & 202
Development Plan and 2005 Operational Review

<p>6. Avoid disturbance to stakeholders and their associated infrastructure</p>	<ul style="list-style-type: none">• No reasonable complaints from stakeholders• Noise emissions comply with EPA requirements• No new weed or pest infestations due to site activities	<ul style="list-style-type: none">• No complaints received from stakeholders.• Noise emissions from site fall within EPA noise emissions requirements• No weed not common to area identified <p>Objective Achieved</p>
---	---	---